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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,486	02/22/2002	Oleg Ershov	AAQUI.0105	8466

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EXAMINER

GABOR, OTILIA

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,486

Applicant(s)

ERSHOV ET AL.

Examiner

Otilia Gabor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 15-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 27-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Response to Amendment

1. The amendment filed 05/21/2004 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 8-14, 27-30 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tell et al. (U. S. Patent 5173749).

Tell et al. discloses an apparatus and method for remotely detecting a gas molecule present in a sample. The sample can be a fluid, such as beer, where the gas concentration in the fluid is measured using this method, but it's not limited to that. The method also can be used in the fermentation process (to determine the concentration of alcohol in the sample). The apparatus comprises:

- a tunable diode laser 1 for emitting radiation at the maximum absorption band of the gas molecule under investigation, where the laser diode is tuned to the desired absorption band by changing the temperature of the laser and by controlling the current supplied to the laser diode. The laser current control is done through a first connection into the diode laser and the temperature of the diode is controlled through a second current connection to the diode laser via a Peltier cooler (claim 4). See Figs.10a and 11a.

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- a single mode fiber coupling 2 whereby the emitted laser light is carried into the measurement cell 4 from the laser diode 1. This type of connection diminishes the spatial inhomogeneity of the emitted laser radiation.

The gas molecule detection apparatus further comprises a beam splitter 19 whereby the emitted laser light from the diode laser is split into two optical channels, one channel going to the sample cell 4 where the specific gas molecule is investigated and where the presence of the specific gas molecule is detected by a detector 41, and a second channel which connect to a reference cell 5 where a known reference sample is investigated and wherefrom detector 51 provides absorption reference of the content of the cell 5. (claims 8-11). The content of the reference cell is dependent on the specific measurement to be done, i.e., when measurement is done on beer, it inherently will contain water (claim 12).

Both, the reference and the measurement cells, are capable to reflect the incident radiation numerous times so that the light passes through the cells multiple times before it is detected, thus amplifying the signal. (see Figs.13a-15) (claims 13-14).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3, 5, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tell et al. and further in view of Azzazy et al. (U. S. Patent 5349187) and admitted prior art (page 3).

Tell et al. discloses a tunable laser diode that is capable of being tuned to the absorption band of the gas molecule under investigation, however since his method and device is applicable in many different fields he only exemplarily discloses a set of wavelength bands for a particular gas. He does not limit his method to that particular band, however. Thus in the case of alcohol molecule detection, using the claimed absorption band would have been obvious to one of ordinary skill in the art since according to the conventional method disclosed by Azzazy et al. alcohol molecules exhibit strong absorption at around 1.5 μm (see Cols.4,5) and since according to the admitted prior art (page 3) the sharpest absorption occurs at between 1.3924-1.3935 μm .

Also, applying a current with the claimed pulse of 3.6 ms constitutes an obvious step to one of ordinary skill in the art since the current applied depends on the desired absorption range and since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges constitutes only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Response to Arguments

7. Applicant's arguments filed 05/21/2004 have been fully considered but they are not persuasive. The Applicant argues that the reference Tell et al. does not disclose remote detection of gas molecules because it discloses a measurement cell which means that the test sample is not exposed to an uncontrolled environment, as required by the claim. This argument is not persuasive because 1) claiming "remote detection" does not inherently mean that the sample that is detected is in an uncontrolled environment, but it merely means that the sample is at some distance from the detector and thus having the measurement cell of Tell positioned at some distance from the detector fulfills that requirement and 2) Tell et al. discloses not only a detection where the sample is in a measurement cell but also in an open atmospheric path.

The Applicant also argues that the references Tell et al. and Azzazy et al. do not include the limitations as claimed in claims 3, 5 and 7 because choosing the specific wavelength is not an obvious matter. This argument is not persuasive because 1) the limitation of claim 7 that the detected gas molecule has an absorption band with the specific Q-branch is inherently present since this is an inherent absorption characteristic

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of alcohol in the near infrared range. Thus, as long as the reference contains a diode laser operating in the near infrared range and as long as the sweep includes this range the limitation is present. Indeed Tell et al. discloses detecting alcohol molecules in a sample where the diode laser is tuned to the specific absorption line of the detected molecule in the near infrared range of between 0.7-1.7 micrometers; 2) the limitation of claim 3 that the diode laser emit radiation near 1.392 micrometer is also inherently present because both Tell and Azzazy contain a diode laser capable of being tuned to the specific absorption line of the measured gas molecule and Tell specifically discloses the range of 0.7-1.7 micrometers which indeed includes the claimed wavelength.

The Applicant did not present arguments regarding claim 5.

Thus, the claims still stand rejected as shown in detail above.

Conclusion

8. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Otilia Gabor whose telephone number is 571-272-2435. The examiner can normally be reached on Monday-Friday between 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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